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ABSTRACT

A system for recognizing connected digits in natural spoken dialogue includes a speech recognition processor that receives unconstrained fluent input speech and produces a string of words that can include a numeric language, and a numeric understanding processor
5 that converts the string of words into a sequence of digits based on a set of rules. An acoustic model database utilized by the speech recognition processor includes a first set of hidden Markov models that characterize the acoustic features of numeric words and phrases, a second set of hidden Markov models that characterize the acoustic features of the remaining vocabulary words, and a filler model that characterizes the acoustic features of out-of-vocabulary
10 utterances. An utterance verification processor verifies the accuracy of the string of words. A validation database stores a grammar, and a string validation processor outputs validity information based on a comparison of the sequence of digits with the grammar. A dialogue manager processor initiates an action based on the validity information.